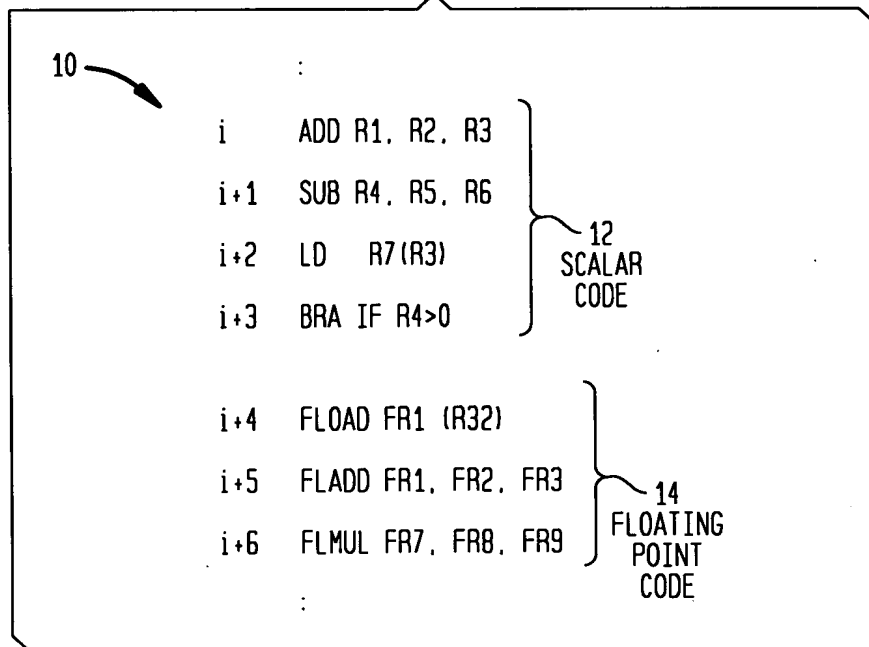
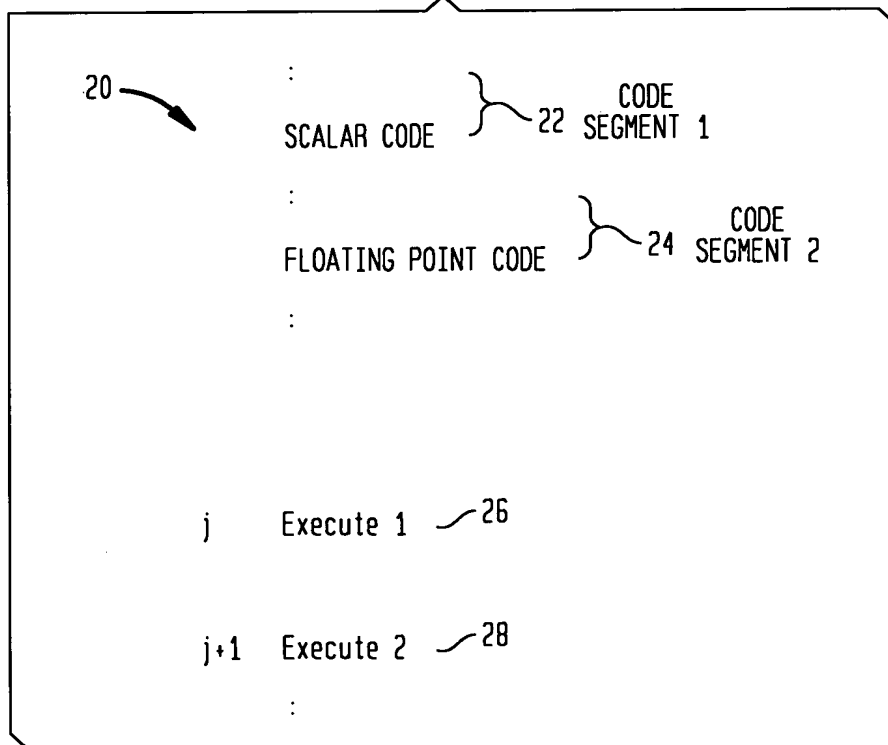




**FIG. 1**



**FIG. 2**



2/23

FIG. 3

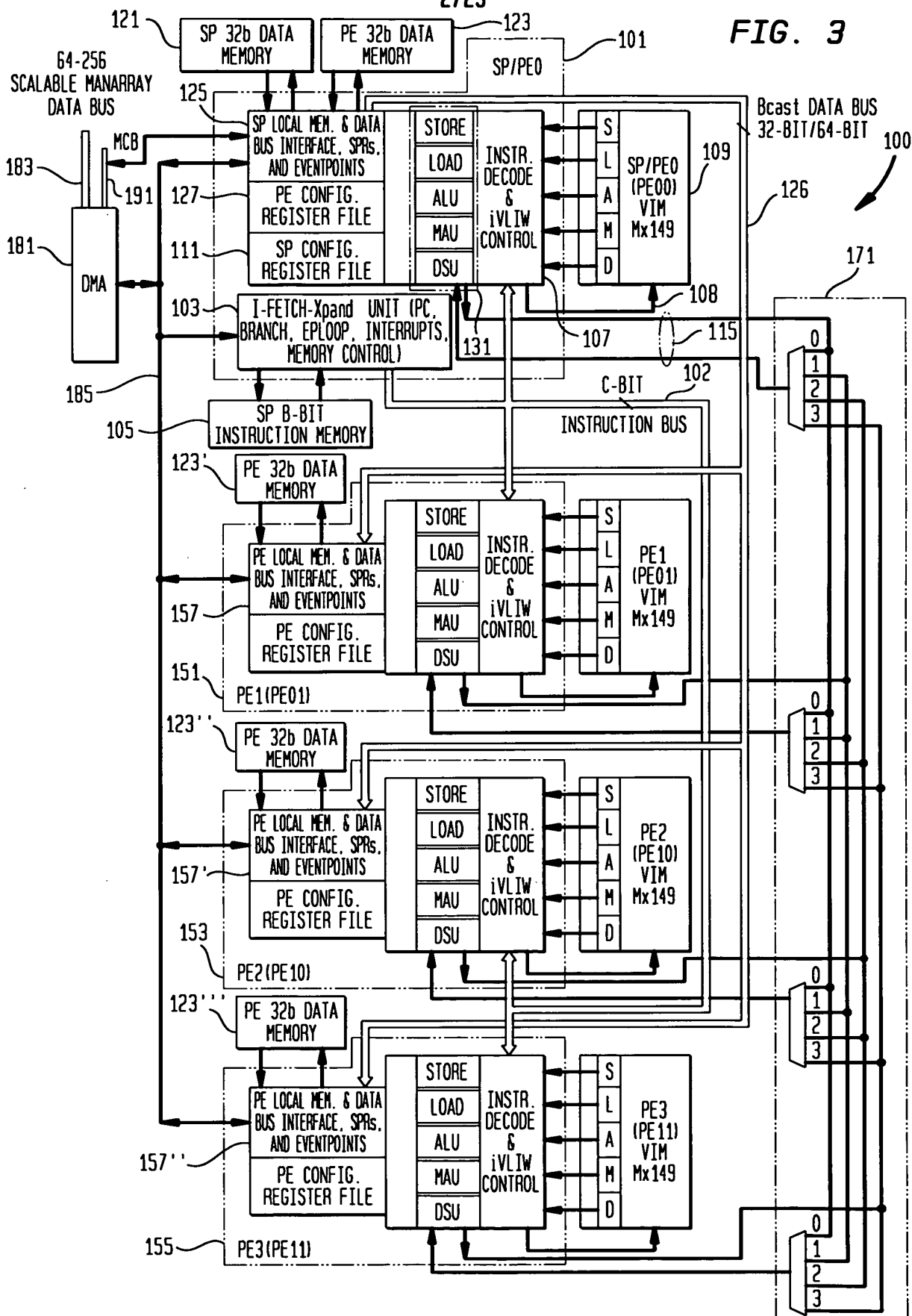


FIG. 4A

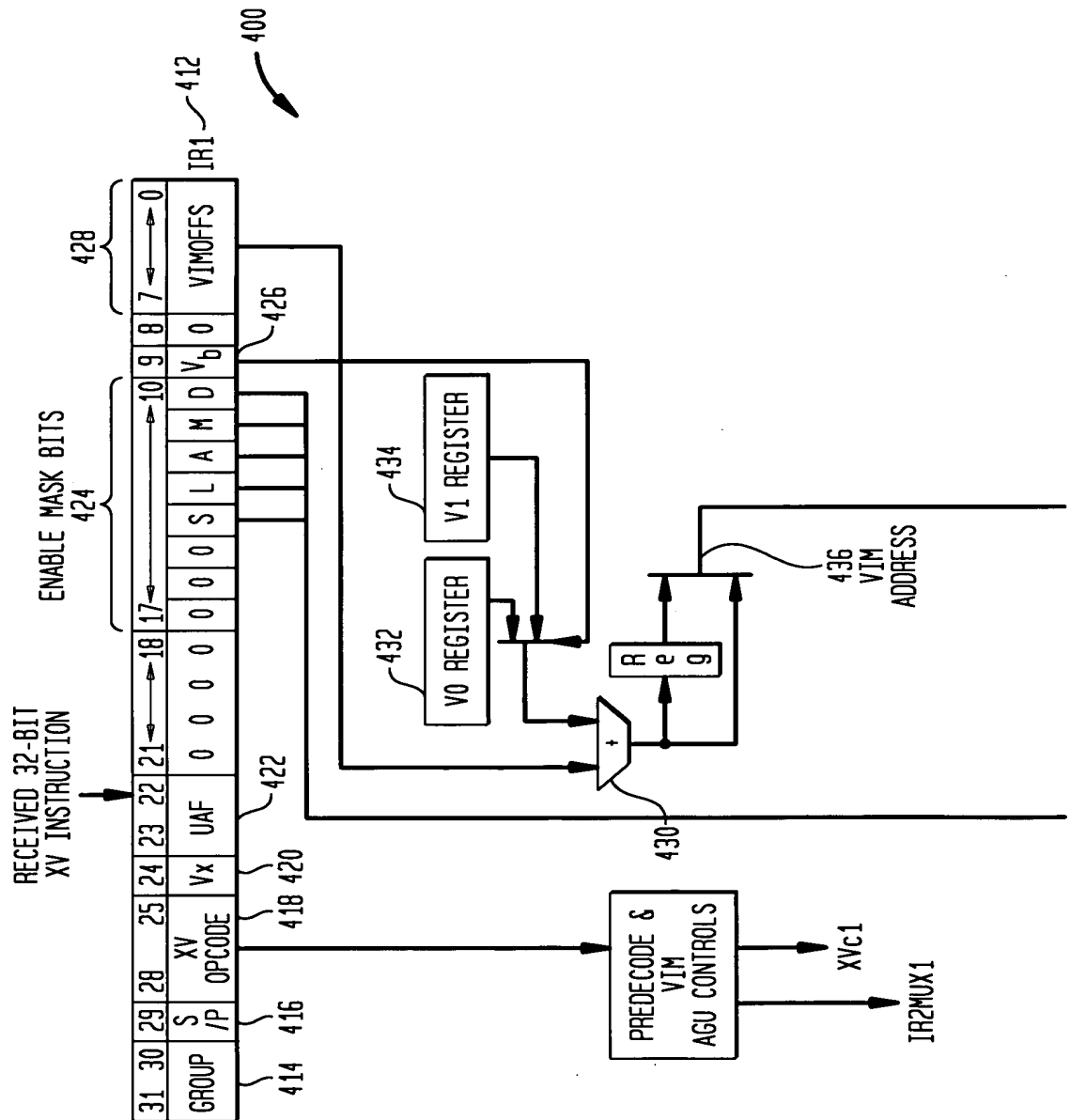


FIG. 4B

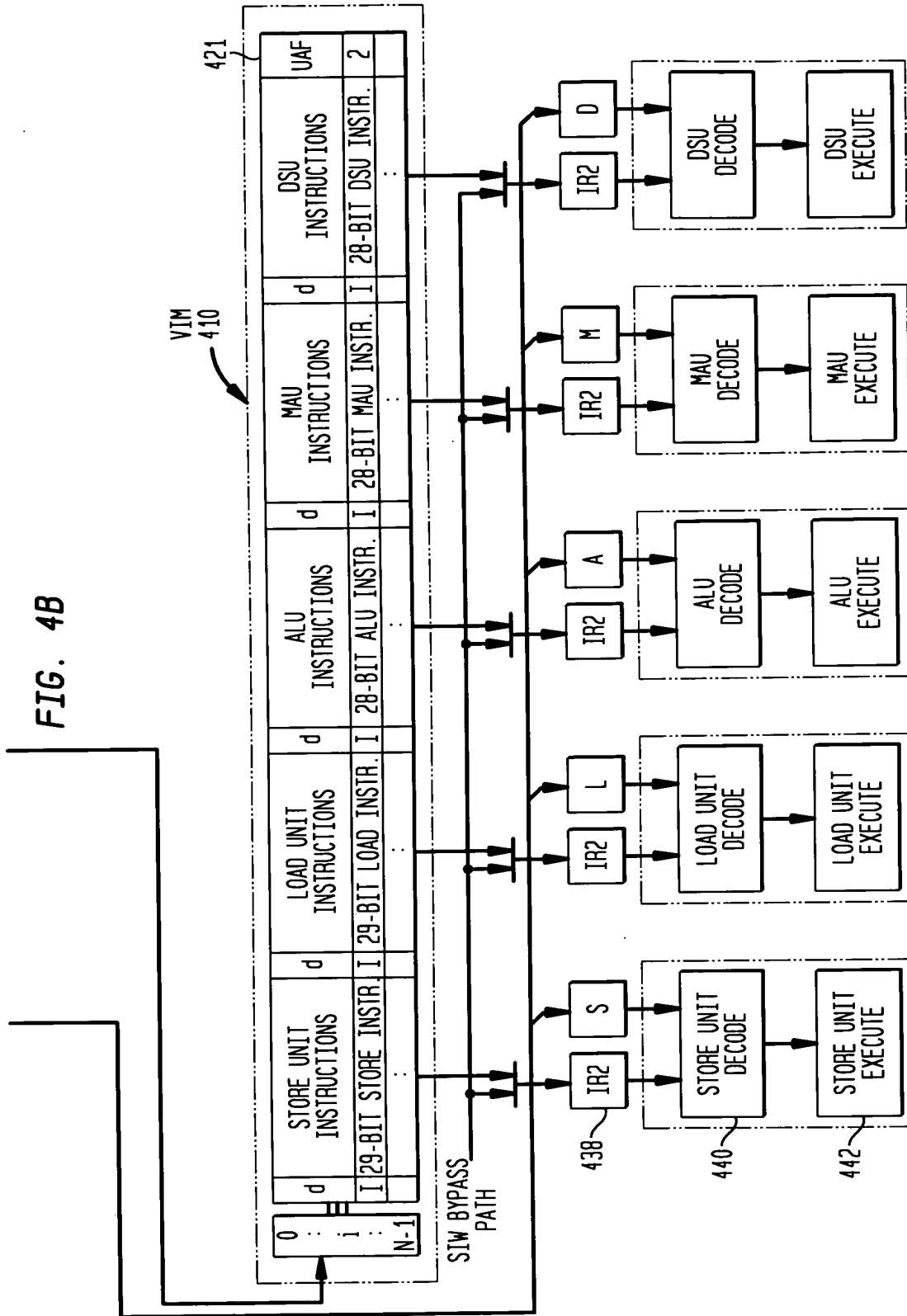
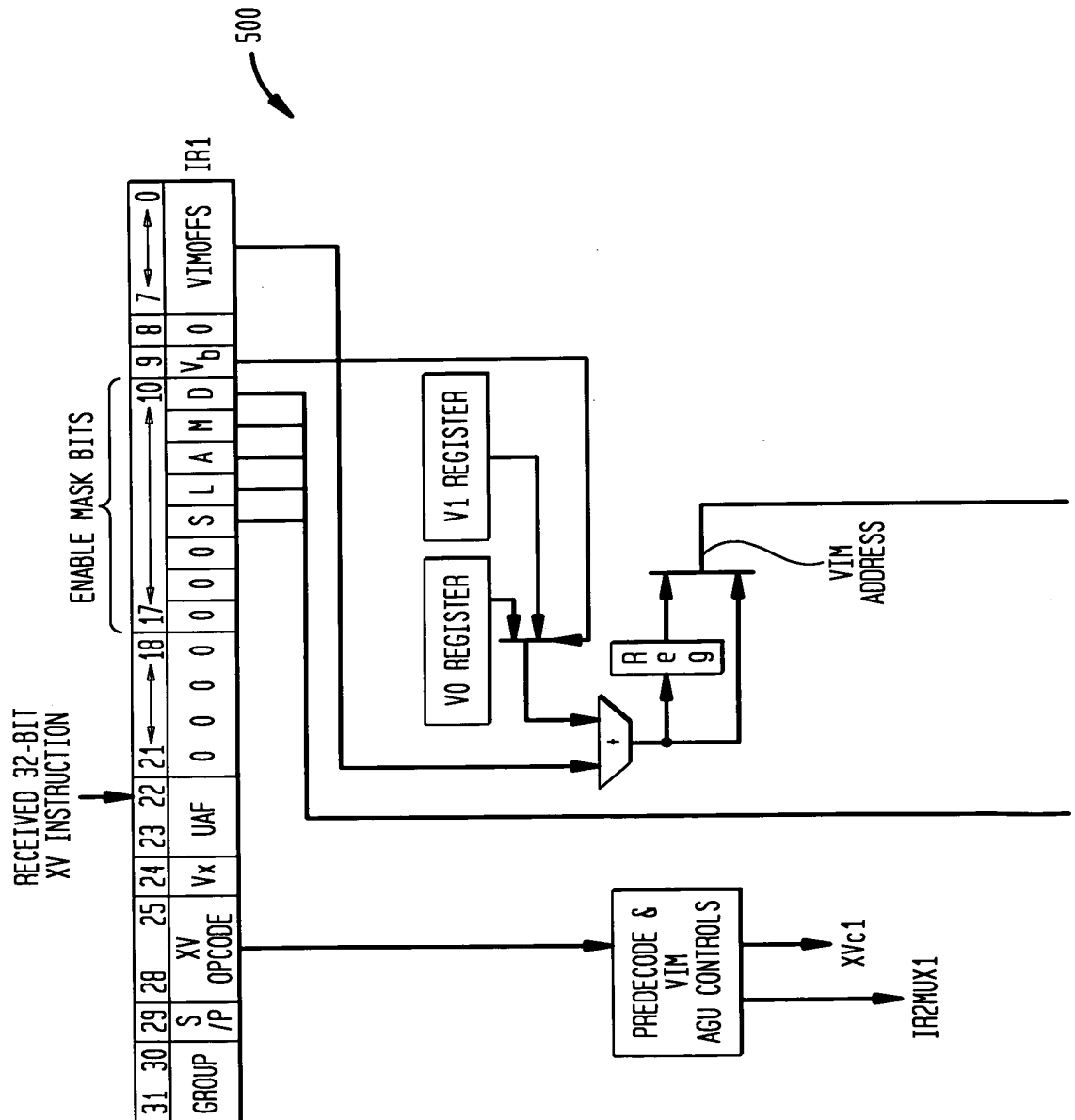


FIG. 5A



6/23

FIG. 5B

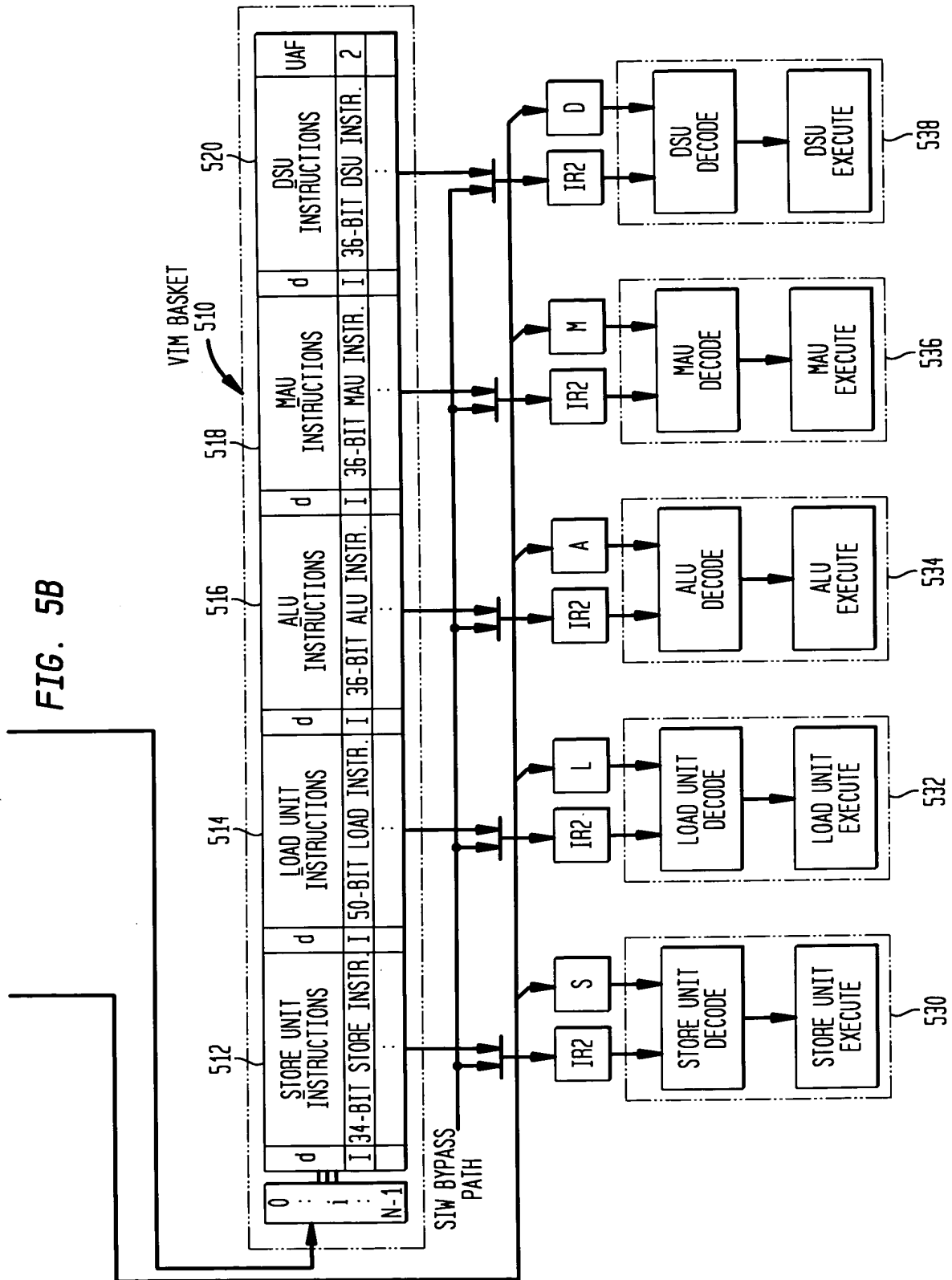


FIG. 6A  
(PRIOR ART)

32-bit Encoding

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
GROUPS/P UNIT				MAUpocode				Rt				Rx				Ry				CE3				SumpExt							
								Rte				0				0				0											

600

FIG. 6B

SLAMDunk 40-bit Encoding Example

39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
GROUPS/P UNIT				MAUpocode'				Rt'				Rx'				Ry'				Rze'				Rye'				CE3				0				SumpExt'			
								Rte'				0				0				0				0															

612 614 610

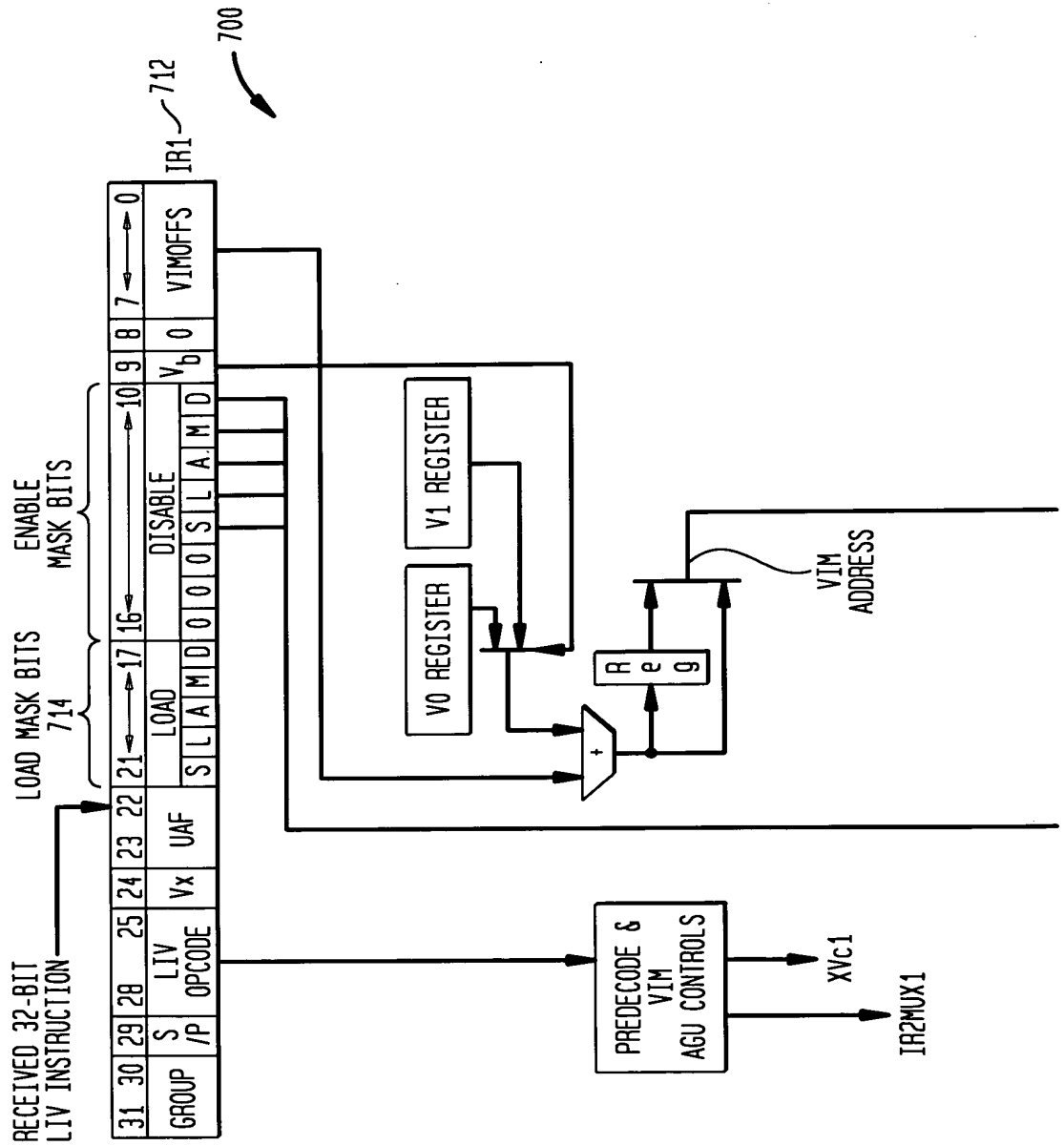
FIG. 6C

32-bit Mapping to SLAMDunk 40-bit Encoding Example

39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
GROUPS/P UNIT				0				MAUpocode				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0				0			

8/23

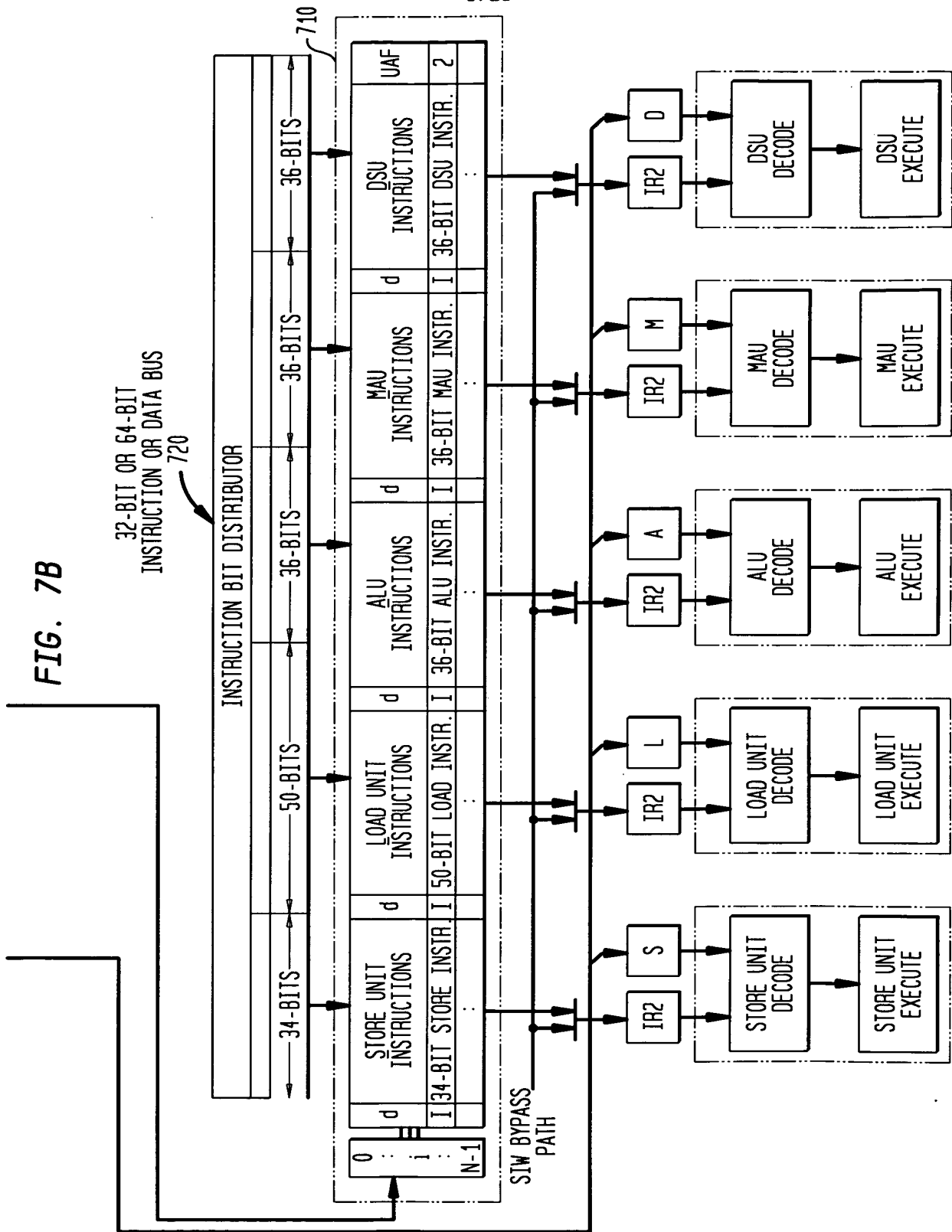
FIG. 7A





9/23

FIG. 7B



**FIG. 8A**

The diagram illustrates a Scalable Manarray Data Bus (64-256) architecture. It features a central bus system connecting multiple processing elements (PE0, PE1, PE2, PE3). Each PE contains a local memory, a data bus interface, a register file, and a processing unit (ALU, MAU, DSU). The architecture includes a DMA, a cache (MCB), and a broadcast data bus (32-bit/64-bit).

**Key Components and Connections:**

- 64-256 SCALABLE MANARRAY DATA BUS:** The main system bus.
- DMA:** Direct Memory Access controller.
- MCB:** Memory Cache Buffer.
- SP 32b DATA MEMORY:** Store Processor 32-bit Data Memory.
- PE 32b DATA MEMORY:** Processing Element 32-bit Data Memory.
- SP/PE0:** Store Processor/Processing Element 0 interface.
- SP LOCAL MEM. & DATA BUS INTERFACE, SPRs, AND EVENTPOINTS:** Interface for Store Processor local memory and data bus.
- PE LOCAL MEM. & DATA BUS INTERFACE, SPRs, AND EVENTPOINTS:** Interface for Processing Element local memory and data bus.
- PE CONFIG. REGISTER FILE:** Configuration register file for each PE.
- SP CONFIG. REGISTER FILE:** Configuration register file for the Store Processor.
- STORE, LOAD, ALU, MAU, DSU:** Data path components within each PE.
- INSTR. DECODE & iVLIW CONTROL:** Instruction decoder and iVLIW control unit.
- S, L, A, M, D:** Status, Load, Address, Memory, and Data registers.
- SP/PE0 (PE00) VIMB MxJ:** Store Processor/Processing Element 0 Vector Instruction Memory Bank.
- PE1 (PE01) VIMB MxJ:** Processing Element 1 Vector Instruction Memory Bank.
- PE2 (PE10) VIMB MxJ:** Processing Element 2 Vector Instruction Memory Bank.
- PE3 (PE11) VIMB MxJ:** Processing Element 3 Vector Instruction Memory Bank.
- I-FETCH-Xpand UNIT (PC, BRANCH, EPLOOP, INTERRUPTS, MEMORY CONTROL):** Instruction fetch and expansion unit.
- SP 8-BIT INSTRUCTION MEMORY:** Store Processor 8-bit instruction memory.
- INSTRUCTION BUS:** Instruction bus connecting the I-FETCH-Xpand UNIT to the PEs.
- C-BIT:** Cache Bit.
- Bcast DATA BUS 32-BIT/64-BIT:** Broadcast data bus.

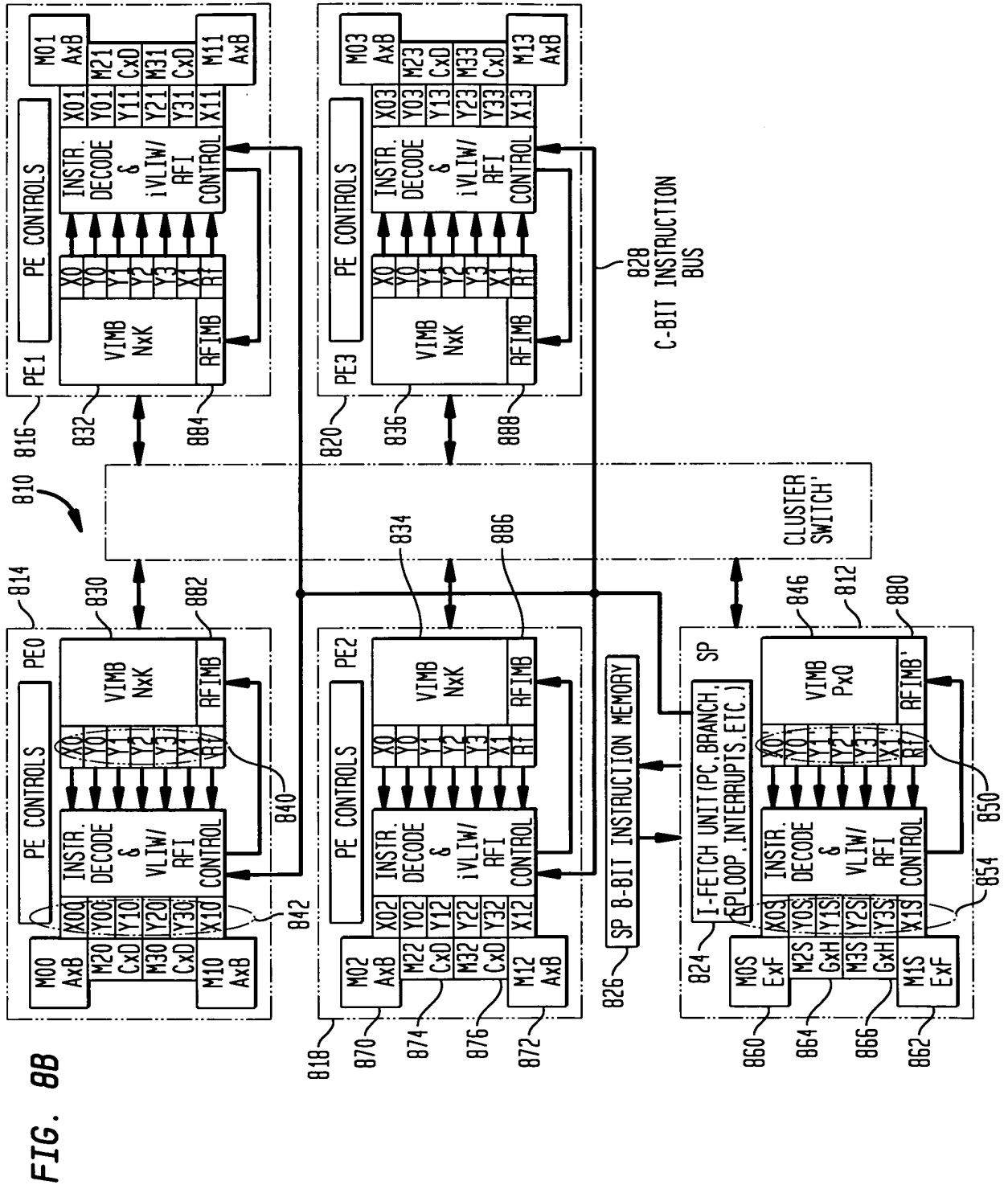


FIG. 9A

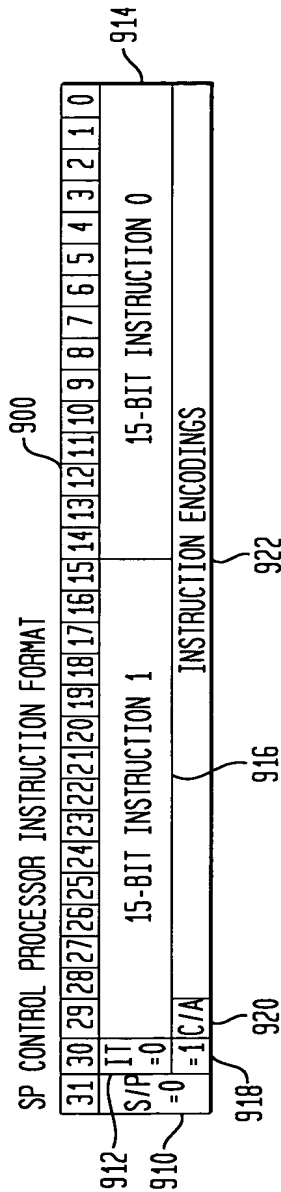


FIG. 9B

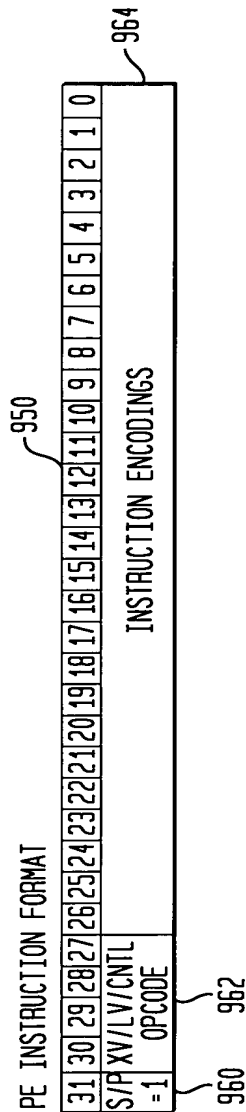


FIG. 10A

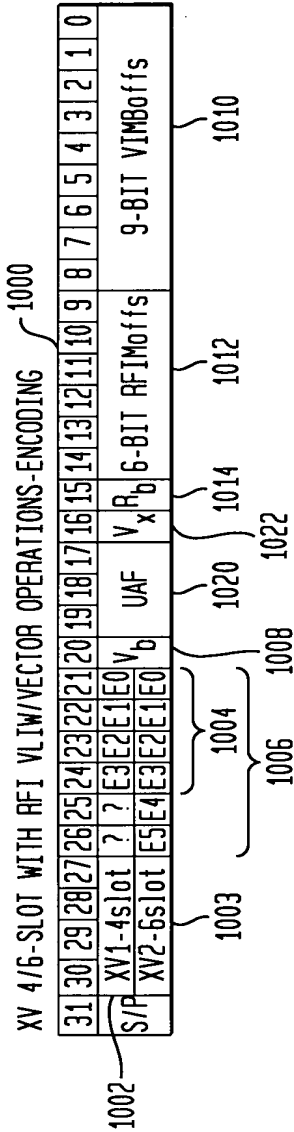


FIG. 10B

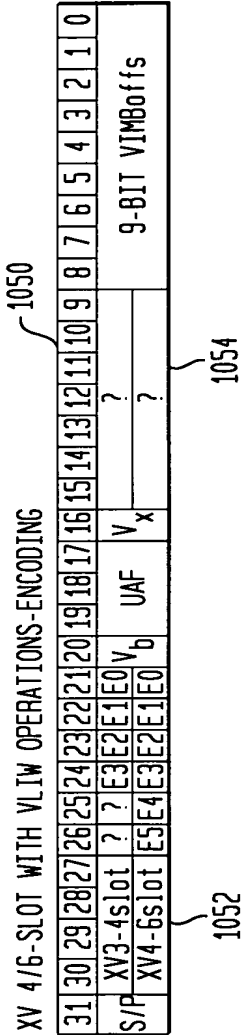


FIG. 11A

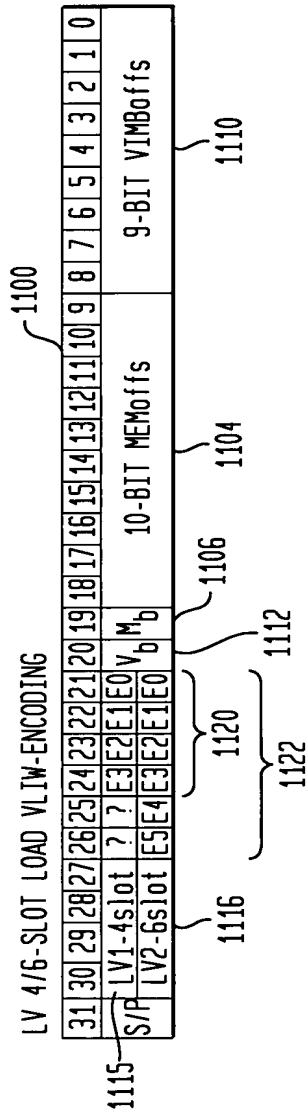


FIG. 11B

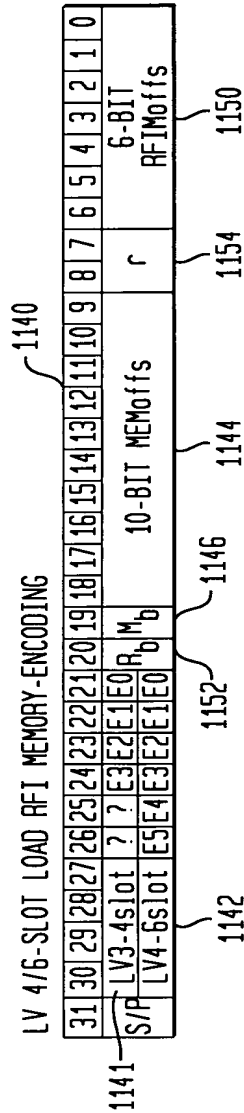


FIG. 11C

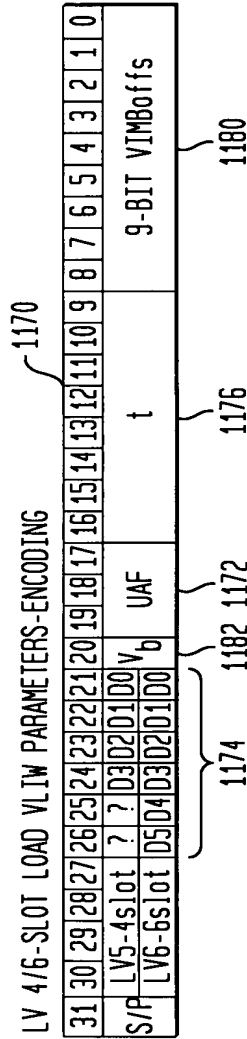
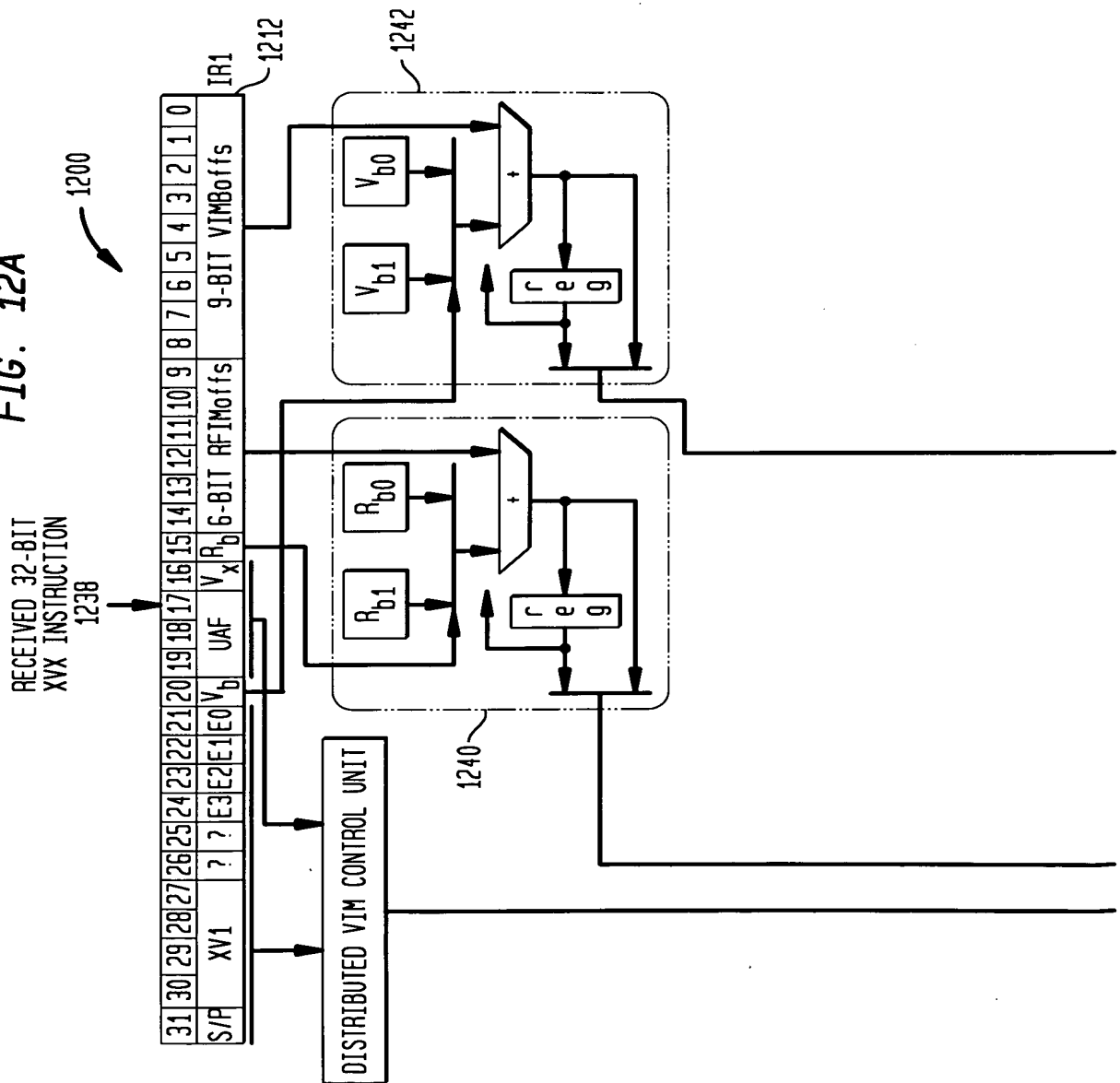


FIG. 12A



16/23

FIG. 12B

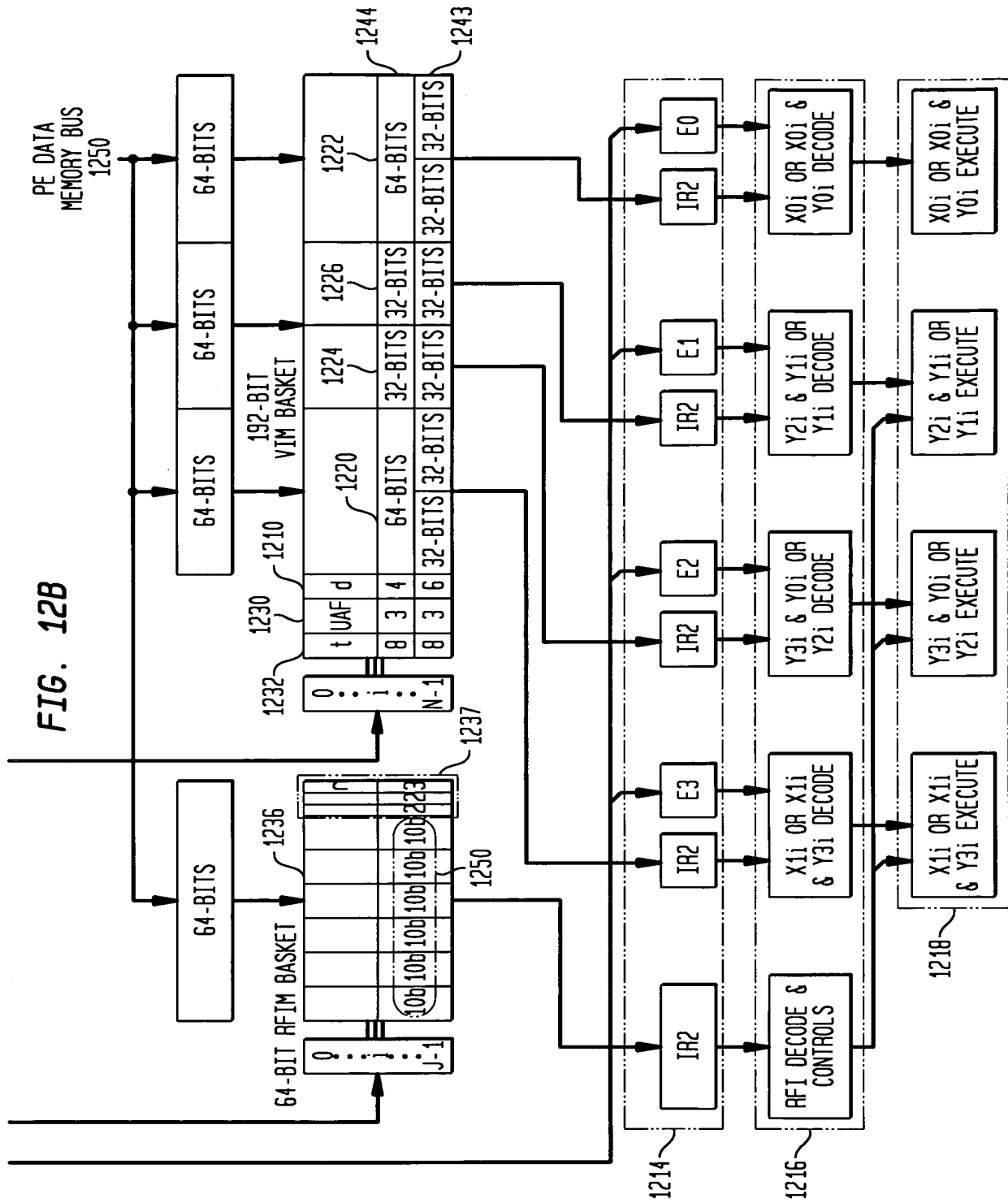
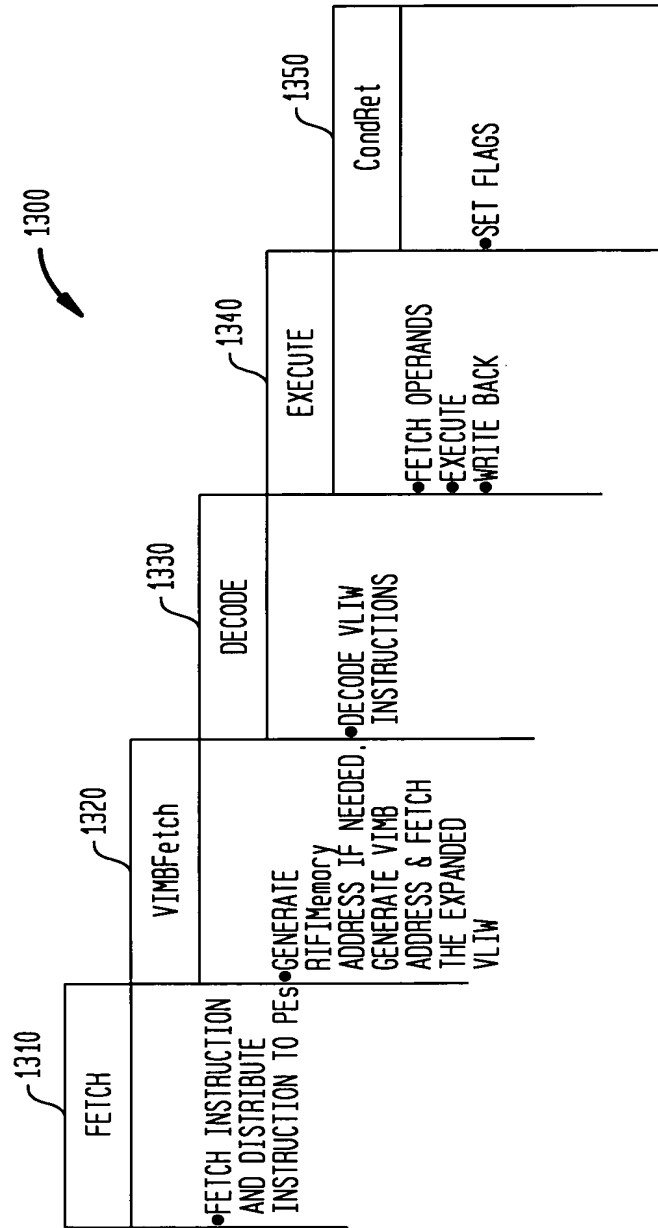
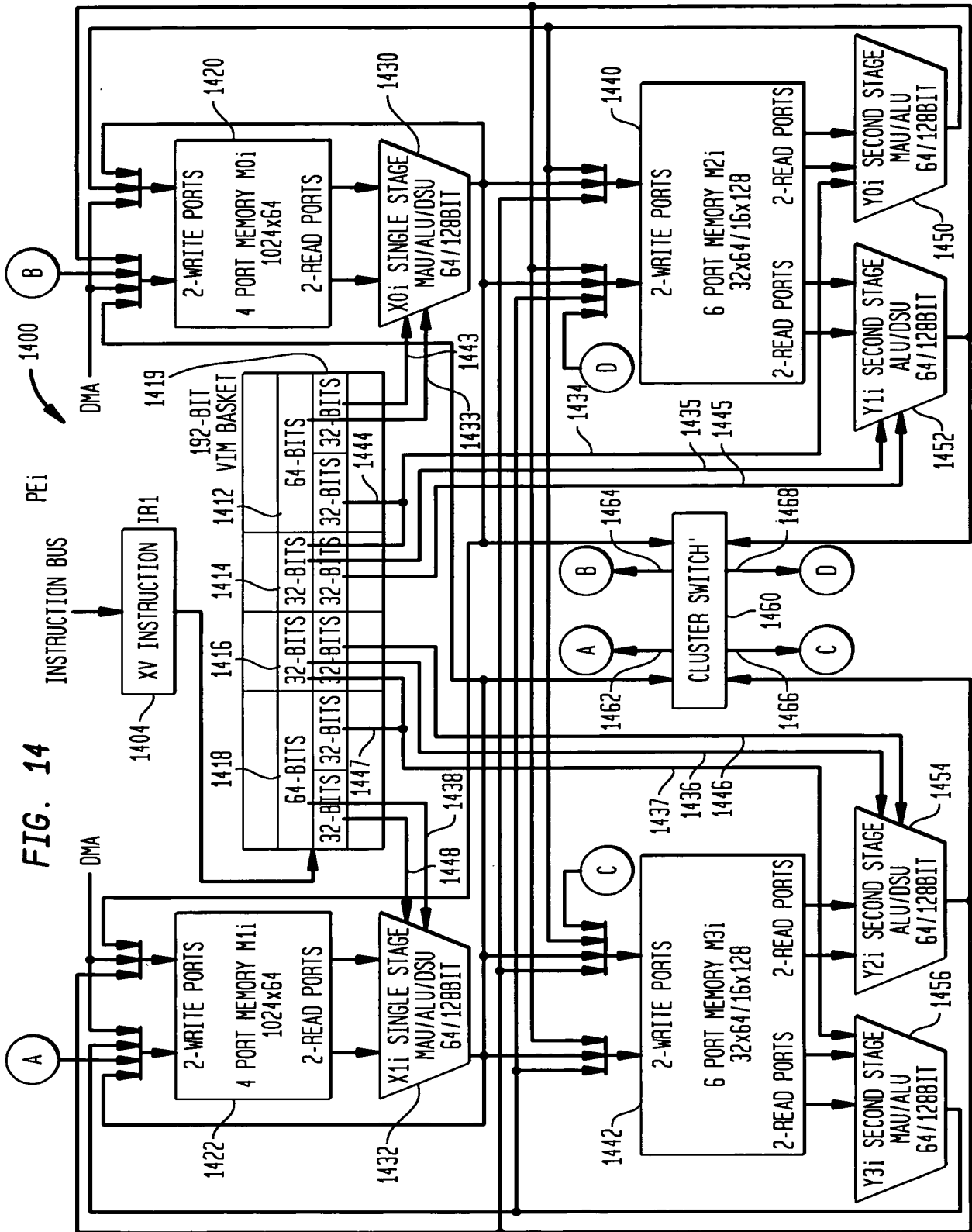




FIG. 13



18/23



19/23

FIG. 15

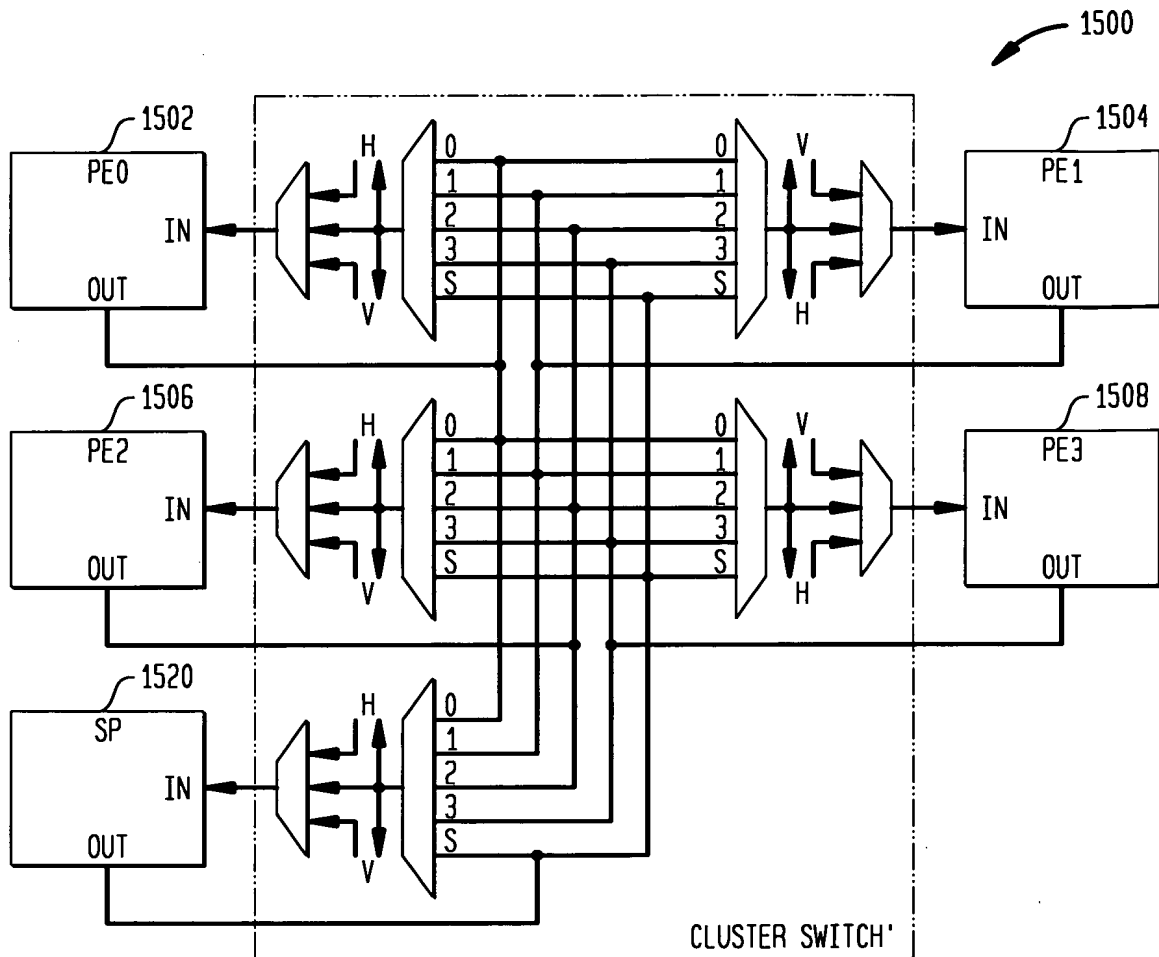
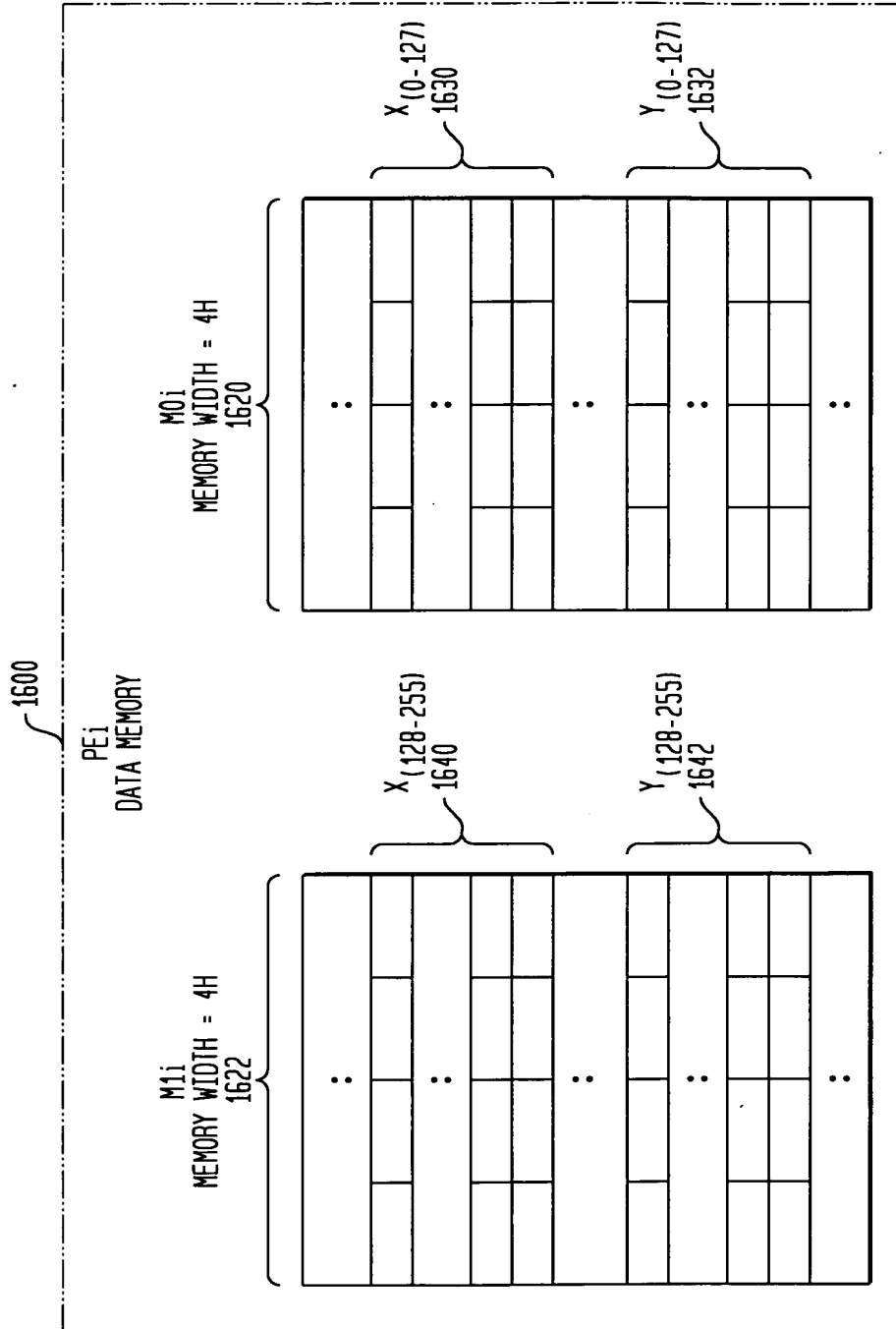


FIG. 16



**FIG. 17**

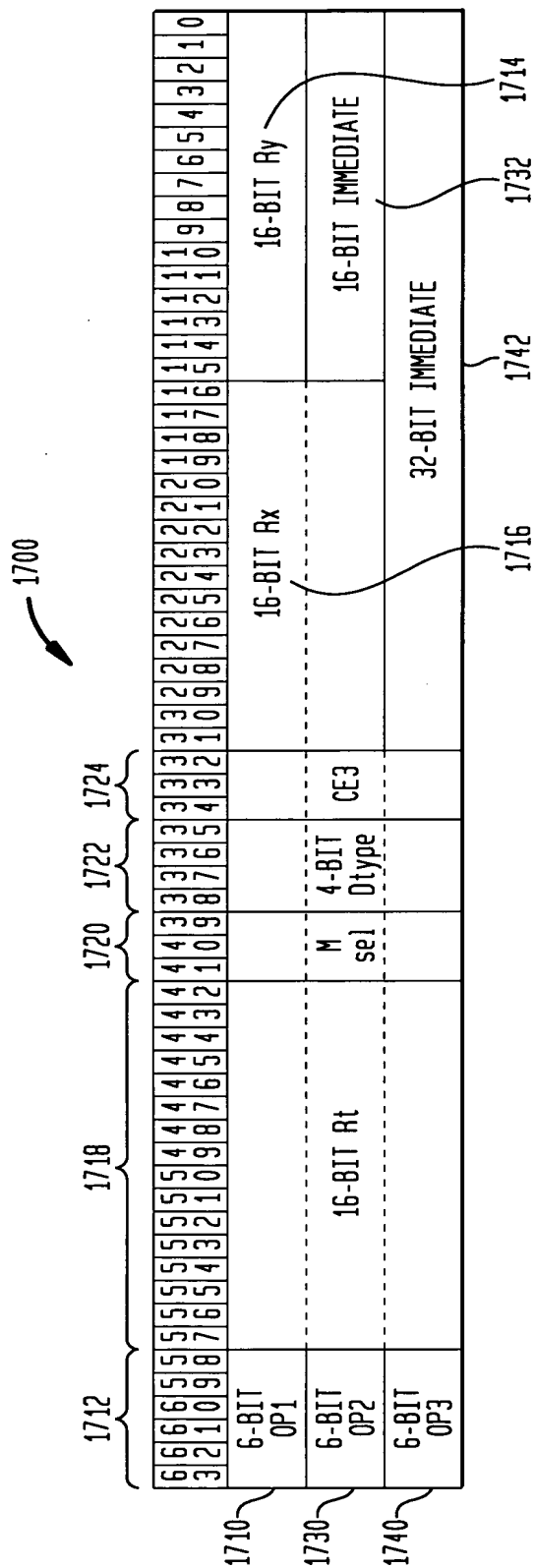


FIG. 18

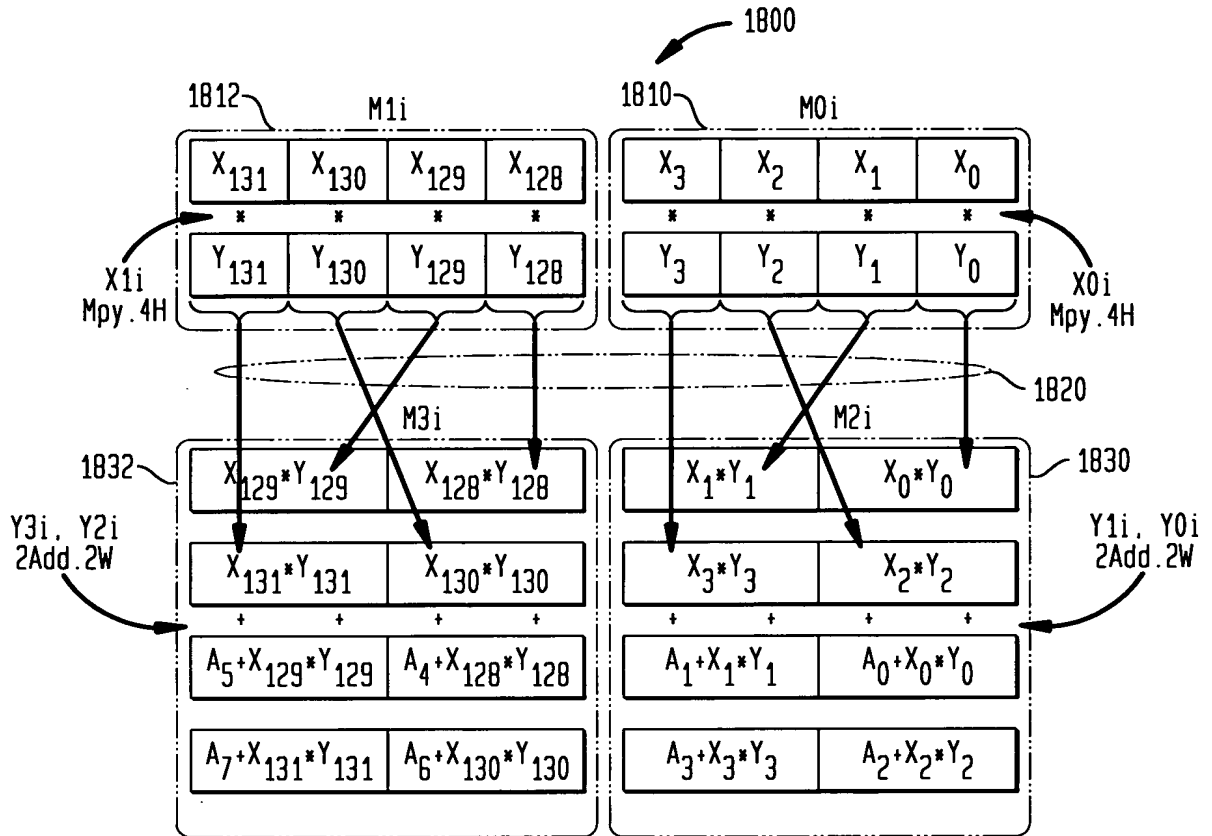


FIG. 19

